Claims

1. A method of stabilising gravel, sand, crushed stone, rock and concrete structures which are cracked, porous or have other cavities difficult of access, and sealing the same against flows of water by injecting a pumpable, low-viscous concrete which is based on an aqueous dispersion containing cement, characterised by injecting aerated concrete with a pore volume of at least 20% by volume into the cavities that are difficult of access and are to be sealed, the aerated concrete being first injected at such a low pressure that the aerated concrete remains intact, and the aerated concrete being then exerted to an increased pressure, such that the aerated concrete located in or in the vicinity of the cavities are pressed further into the cavities.

2. A method according to claim 1, the aqueous dispersion comprising finely-ground cement, a dispersing agent and optionally fine-particulate material having a large specific surface, characterised in that in the aerated concrete existing air bubbles collapse when the aerated concrete is pressed further into the cavities, escaping air entraining cement and the fine-particulate material, if any, into the cavities, where sedimentation and hydration take place.

3. A method according to claim 1 or 2, characterised in that the aerated concrete has an air pore volume of 40-85%, is hydrophobic and is not spontaneously miscible with water.

4. A method according to any one of the preceding claims, characterised in that the aerated concrete contains an anionic surfactant of the general formula

$$(R)_m\text{-}R_1\text{-}(SO_3M)_2 \qquad (I)$$

wherein R is an aliphatic group having 4-20 carbon atoms, m is a number 1 or 2, the sum of the number of carbon atoms in the group or in the groups R being 6-30, R_1 is an aromatic group containing at least 2 aromatic rings and 10-20 carbon atoms, and M is a preferably monovalent cation or hydrogen.

5. A method according to any one of the preceding claims, characterised in that the aerated concrete contains an accelerator, retarder and/or thickening agent.

6. A method according to any one of the preceding claims, characterised in that the injection of the concrete occurs at a pressure below 3 bar, and that the pressure is then increased to at least 6 bar.

7. Aerated concrete, characterised in that is has a pore volume of at least 20% and contains finely-ground cement with such a particle distribution that at least 95% pass

a screen with a mesh size of 64 μm, and 2-10%, based on the weight of the cement, of a fine-particulate material with a particle size smaller than that of the cement.

8. Aerated concrete according to claim 7, c h a r a c t e r i s e d in that it has an air pore volume of at least 40-85% and contains

0.1-1 parts by weight of a dispersing agent,

35-80 preferably 50-70 parts by weight of water,

0-10 parts by weight of a fine-particulate material with a particle size smaller than that of the cement,

0-2.5 parts by weight of a resin having a molecular weight below 10,000 and a saponification rate of 100-250,

0-2.5 parts by weight of an accelerator, retarder and/or thickening agent which control the hydration of the cement or gradually increase the viscosity of the concrete, and

0-2 parts by weight of a swelling additive per 100 parts by weight of cement.

9. Aerated concrete according to claim 8, c h a r a c t e r i s e d in that the dispersing agent contains a disulphonate of the general formula

$$(R)_m\text{-}R_1\text{-}(SO_3M)_2 \qquad (I)$$

wherein R is an aliphatic group having 4-20 carbon atoms, m is a number 1 or 2, the sum of the number of carbon atoms in the group or in the groups R being 6-30, R_1 is an aromatic group containing at least 2 aromatic rings and 10-20 carbon atoms, and M is a preferably monovalent cation or hydrogen.

10. Aerated concrete according to any one of the claims 7-9, c h a r a c t e r i z e d in that it contains 0.1-2.5 parts by weight of the resin in claim 8.

11. Aerated concrete according to any one of the claims 7-10, c h a r a c t e r i z e d in that it contains 2-10% by weight of the fine-particulate material in claim 8, and that the cement has such a particle size that 95% by weight pass a screen with a mesh size of 32 μm.